

CORE OPERATING LIMITS REPORT
Surry 1 Cycle 16 Pattern UN
Rev 0

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1.0 INTRODUCTION

The Core Operating Limits Report (COLR) for Surry 1 Cycle 16 has been prepared in accordance with the requirements of Technical Specification 6.2.C.

The technical specifications (TS) affected by this report are:

TS 3.1.E.1 & TS 5.3.A.6.b - Moderator Temperature Coefficient

TS 3.12.A.2 & TS 3.12.A.3 - Control Bank Insertion Limits

TS 3.12.B.1 & TS 3.12.B.2 - Power Distribution Limits

2.0 OPERATING LIMITS

The cycle-specific parameter limits for the specifications listed in Section 1.0 are presented in the following subsections. These limits have been developed using the NRC-approved methodologies specified in TS 6.2.C.

2.1 Moderator Temperature Coefficient (TS 3.1.E.1 & TS 5.3.A.6.b)

2.1.1 The Moderator Temperature Coefficient (MTC) limits are:

+6.0 pcm/°F at less than 50 percent of RATED POWER, or

+6.0 pcm/°F at 50% of Rated Power and linearly decreasing to 0 pcm/°F at Rated Power

2.2 Control Bank Insertion Limits (TS 3.12.A.2)

2.2.1 The control rod banks shall be limited in physical insertion as shown in Figure 1.

2.3 Heat Flux Hot Channel Factor-FQ(z) (TS 3.12.B.1)

$$FQ(z) \leq \frac{CFQ}{P} * K(z) \text{ for } P > 0.5$$

$$FQ(z) \leq \frac{CFQ}{0.5} * K(z) \text{ for } P \leq 0.5$$

$$\text{where: } P = \frac{\text{THERMAL POWER}}{\text{RATED POWER}}$$

2.3.1 CFQ = 2.32

2.3.2 K(z) is provided in Figure 2.

2.4 Nuclear Enthalpy Rise Hot Channel Factor, F Δ H(N) (TS 3.12.B.1)

$$F\Delta H(N) \leq CFDH * \{1 + PFDH*(1 - P)\}$$

$$\text{where: } P = \frac{\text{THERMAL POWER}}{\text{RATED POWER}}$$

2.4.1 CFDH = 1.56 for Surry Improved fuel (SIF)

2.4.2 PFDH = 0.3

Figure 1

S1C16 ROD GROUP INSERTION LIMITS

Fully w/d position = 229 steps

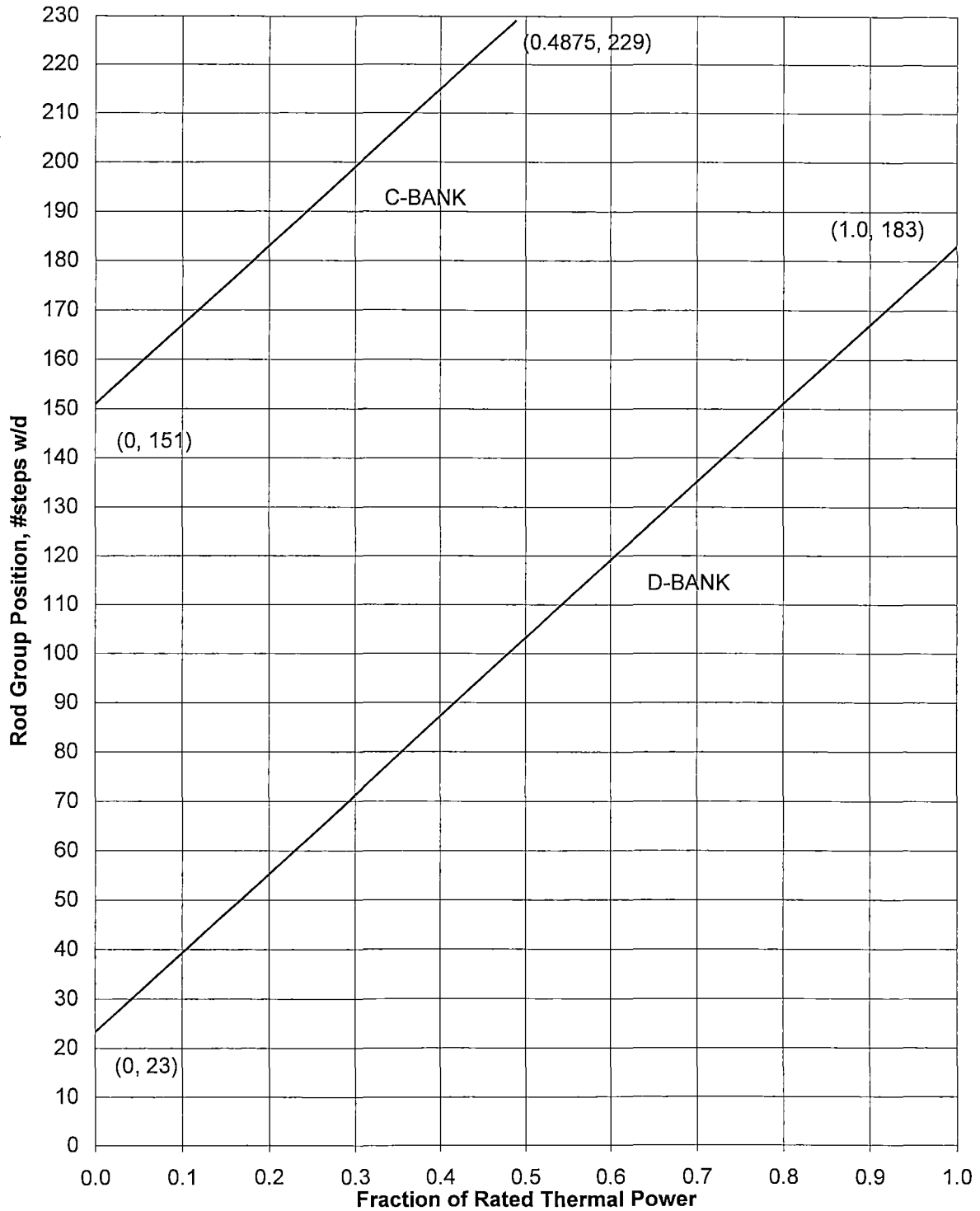


Figure 2

K(Z) - Normalized FQ as a Function of Core Height

